

## KOREAN PATENT ABSTRACTS

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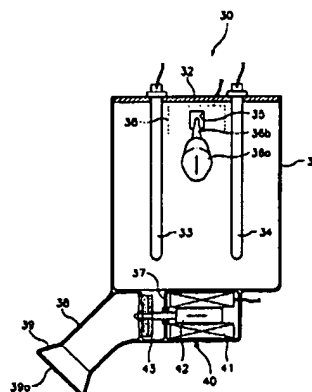
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## (54) DEVICE FOR SUPPLYING STERILIZING WATER OF WASHING MACHINE

## (57) Abstract:

PURPOSE: A supplying device of sterilizing water for a washing machine is provided to sterilize remaining bacteria in the laundry by producing and spraying the sterilizing water to the laundry inside a washing tub. CONSTITUTION: A washing machine contains a storage tank(31) connected an inlet(35) with a passage of a water supplying valve through a connecting pipe and formed an outlet(37) toward a washing tub; a pair of silver rods(33,34) installed inside water of the storage tank to make sterilizing water through electrolysis and connected with power; an inflow valve(36) to isolate the inlet at the full level of water in the storage tank; and a discharging valve(40) to supply the sterilizing water to the washing tub by opening and closing the outlet. By spraying the sterilizing water to the laundry, the laundry is sterilized.



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SUPPLIER OF STERILIZING WATER FOR WASHING MACHINE  
[Seitakki ui salkyunsu kongkub jangchi]

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## Specification

### Brief description of the figures

Figure 1 is a cross section showing the entire constitution of a washing machine in which the supplier of sterilizing water for the present invention is mounted.

Figure 2 is a cross section showing the constitution of a water supplier and the sterilizing water supplier that are mounted in the washing machine of the present invention.

Figure 3 is a cross section showing the constitution of the supplier of sterilizing water for the washing machine of the present invention.

### Explanation of numerals of the main parts of the figures

10	Main body
11	Water tub
12	Washing tub
16	Pulsator
17	Driving motor
17[sic; 18]	Power transmitter
15	Drainer
21	Water supply pipe
22	Water supply valve
26	Connecting pipe
30	Sterilizing water supplier
31	Storage bucket
32	Cover

33, 34	Silver rods
35	Inflow opening
36	Inflow valve
37	Drainage opening
38	Discharge pipe
39	Nozzle
40	Discharge valve

### Detailed explanation of the invention

Purpose of the invention

Technical field of the invention and prior art of the field

The present invention pertains to a supplier of sterilizing water for a washing machine. More specifically, the present invention pertains to a supplier of sterilizing water for a washing machine that can sterilize the laundry by spraying sterilizing water, which is generated through the electrolysis of silver rods and water, on the laundry.

In a typical washing machine, the laundry, detergent, and washing water are put into a washing tub, and both the washing water and the laundry are stirred by rotating an internal pulsator, realizing washing. Next, after this washing stroke, while passing through several cycles of water supply and drainage processes, the laundry undergoes a rinsing stroke for rinsing, and after the rinsing stroke, a dehydrating stroke is carried out by rotating the washing tub at high speed. The operation is then finished.

On the other hand, in this washing machine, stains of the laundry could be removed while passing through the washing stroke, and the detergent component remaining in the laundry could be removed

while passing through the rinsing stroke. However, even after finishing the laundering, bacteria remaining in the laundry could not be sterilized.

#### Technical problems to be solved by the invention

The present invention solves this problem, and its purpose is to provide a supplier of sterilizing water for a washing machine that manufactures sterilizing water by means of supplied water and can sterilize bacteria that remains in the laundry by spraying the sterilizing water on the laundry in a washing tub.

#### Constitution and operation of the invention

In order to achieve the above-mentioned purpose, the supplier of sterilizing water for a washing machine of the present invention is characterized by the fact that in a washing machine equipped with a water tub for storing washing water, a washing tub which is rotatably installed in the above-mentioned water tub, and a water supply valve which is installed halfway in a water supply pipe to regulate the water supply of the above-mentioned water tub, it includes a storage bucket in which an inflow opening formed at one side is connected to a flow passage of the above-mentioned water supply valve and a lower discharge opening is formed toward the inside of the above-mentioned washing tub; a pair of silver rods that is installed by immersing them in water in the above-mentioned storage bucket so that the water in the above-mentioned storage bucket is changed to sterilizing water by the electrolysis, wherein power sources with different poles are respectively connected to the silver rods; an inflow valve that cuts off the above-mentioned inflow opening when the water level of the above-mentioned storage bucket is filled to the rim; and a discharge valve that opens and closes the above-mentioned discharge opening.

In addition, it is characterized by the fact that the above-mentioned inflow valve consists of a float valve that is mounted at the inflow opening of the above-mentioned storage bucket, opens and closes the flow passage in accordance with the water level, and includes a water level sensing means; and when it is sensed through the water level sensing means of the above-mentioned inflow valve that the water level is filled to the rim, power is applied to the above-mentioned silver rods.

Moreover, it is characterized by the fact that the above-mentioned discharge valve consists of a solenoid valve that is operated by receiving power; and upon the dehydrating stroke of the washing machine, the above-mentioned discharge opening is opened so that the sterilizing water in the above-mentioned storage bucket is supplied into the above-mentioned washing tub.

Furthermore, it is characterized by the fact that a nozzle in which multiple spray holes are formed is provided at the end of the above-mentioned discharge opening so that the sterilizing water being discharged is uniformly sprayed into the above-mentioned washing tub.

Next, a preferred application example of the present invention will be explained in detail referring to the attached figures.

The washing machine to which the present invention is applied, as shown in Figure 1, is equipped with a water tub (11), which is installed in a main body case (10) and stores washing water, and a washing tub (12) which is rotatably installed in the water tub (11). At that time, the water tub (11) is supported in a state in which the lower surface of its outer surface is hung through a suspension system (13), which is hung and supported to the inner upper part of the main body case (10).

A pulsator (16) for forming a washing water flow by rotating forward and backward is provided in the washing tub (12), and a driving gear for rotating the washing tub (12) and the pulsator (16) is provided at the outside of the lower surface of the water tub (11). This driving gear includes a driving motor (17) that receives power and generates a turning force, power transmitter (18) that can

simultaneously or selectively transmit the turning force of the driving motor (17) to the pulsator (16) and the washing tub (12), and a belt (19) that is connected between the driving motor (17) and the power transmitter (18) and acts as a medium.

In addition, in the upper part of the water tub (11), that is, in the upper part of the main body case (10), a water supplier (20) consisting of water supply pipe (21), water supply valve (22), etc., as shown in Figure 2 is provided to be able to supply washing water into the water tub (11). Here, 23 and 24 are detergent dissolvers that dissolve a detergent and feed it into the water tub (11) by utilizing water being supplied, and these dissolvers are installed in the upper part of the main body case (10) along with the water supplier (20), though they are not shown in Figure 1. Moreover, a drain (15) consisting of drainage pipe (15a), drainage valve (15b), etc., is provided in the lower part of the water tub (11) for discharging the washing water contained in the water tub (11) to the outside.

Furthermore, as a characteristic constitution of the present invention, a sterilizing water supplier (30) that manufactures sterilizing water by means of the electrolysis of water and sprays it into the washing tub (12) is provided in the upper part of the main body case (10) adjacent to the water supplier (20).

This sterilizing water supplier (30), as shown in Figures 2 and 3, is equipped with a square storage bucket (31) that is filled with water and has an open upper part and a cover (32) for covering the upper part of the storage bucket (31). In addition, a pair of silver rods (33, 34) that is advanced into the storage bucket (31) and immersed in the water in the storage bucket (31) is installed in the cover (32). At that time, power sources are connected to the upper ends of two silver rods (33, 34) so that direct-current power with different poles is supplied.

Moreover, an inflow opening (35) is formed at one side of the upper part of the storage bucket (31) so that water can be supplied into the storage bucket (31), and a connecting pipe (26) that is branched and extended from the water supply pipe (21) passing through the water supply valve (22) is connected



to the inflow opening (35). Furthermore, an inflow valve (36) for blocking the inflow opening (35) when the water in the storage bucket (31) is filled to the rim is installed at the inflow opening (35). At that time, the inflow valve (36) consists of an ordinary float valve, which blocks the flow passage by means of a floater (36a) and a lever (36b) that ascend and descend in accordance with the water level, only when the water in the storage bucket (31) is filled to the rim, and includes a water level sensing means (include in a body with the inflow valve) for sensing a water filling state to the rim according to the operation of the floater (36a) and the lever (36b). Here, the water level sensing means senses the water level state of the storage bucket (31) so that power can be applied to the above-mentioned silver rods (33, 34), only when the water is filled to the rim.

With this constitution, sterilizing water is provided by using the water that is contained in the storage bucket (31), and when direct-current power of an anode (+) and a cathode (−) are applied to two silver rods (33, 34) immersed in the storage bucket filled with water, two silver rods (33, 34) are reacted with the water to cause electrolysis, generating a silver solution by the sterilizing water with sterilizing power. At that time, it is favorable for the direct-current power, which is applied to two silver rods (33, 34), to be stopped when the concentration of the sterilizing water of the silver solution reaches about 5 ppm, having sterilizing power.

In addition, in the lower part of the storage bucket (31), a drainage opening (37) is formed so that the sterilizing water generated through this constitution can be supplied into the washing tub (12). In this drainage opening (37), a discharge pipe (38) extending at a prescribed length toward the washing tub (12) is provided to guide the sterilizing water to the washing tub (12). Moreover, a discharge valve (40) consisting of an ordinary solenoid valve, which is operated by receiving power, is installed for opening and closing the discharge opening (37). This discharge valve (40) is constituted so that a cut-off plate (43), which advances and retreats along with an armature (42) when the armature (42) advances and

retreats in a female coil (41), opens and closes the flow passage. Furthermore, a nozzle (39) in which multiple spray holes (39a) are formed is provided at the outlet of the discharge pipe (38) so that the sterilizing water, which is supplied into the washing tub (12), can be uniformly sprayed.

Next, the entire operation of the washing machine of the present invention with this constitution will be explained.

If a user puts the laundry into the washing tub (12) and selects and operates a washing course, the water supply valve (22) provided in the upper part of the main body (10) is opened to supply an appropriate amount of washing water into the water tub (11). At that time, the washing water, which is supplied through the water supply valve (22), dissolves a detergent while passing through the detergent dissolvers (23, 24) and is supplied with the detergent into the water tub (11).

In addition, part of the water, supplied at the same time of the water supply operation of the water tub (11), is also supplied into the storage bucket (31) of the sterilizing water supplier (30) through the connecting pipe (26) branched from the water supply pipe (21). At that time, in the sterilizing water supplier (30), if the water of the storage bucket (31) is filled to the rim, the water supply to the storage bucket (31) is stopped by the operation of the inflow valve (36) consisting of a float valve, and it is sensed through the water level sensing means of the inflow valve (36) that the storage bucket (31) is filled to the rim with water. Next, when it is sensed through the water level sensing means of the inflow valve (31) that the storage bucket is filled to the rim with water, direct-current power is applied to two silver rods (33, 34) in the storage bucket (31), and the two silver rods (33, 34) and the water are reacted to cause electrolysis, generating sterilizing water with sterilizing power. In other words, the water in the storage bucket (31) becomes a sterilizing water of a silver solution through the electrolysis for a prescribed time.

On the other hand, if the washing water is filled in the water tub (11), the washing machine carries out a washing stroke while rotating the pulsator (16) and carries out a rinsing stroke that repeats several cycles of water supply and drainage. After finishing the rinsing stroke, a dehydrating stroke for dehydrating the laundry is then carried out.

At that time, in the washing machine of the present invention, at the initial stage where the dehydrating stroke is carried out, the sterilizing water manufactured during the washing stroke is supplied into the washing tub (12) through the discharge pipe (38) while the drainage opening (37) is opened by the operation of the discharge valve (40) of the sterilizing water supplier (30). In other words, while applying the dehydrating stroke, a process that sterilizes bacteria remaining in the laundry by spraying the sterilizing water in the storage bucket (31) on the laundry in the washing tub (12) is carried out. At that time, since the nozzle (39) having multiple spray holes (39a) is provided at the outlet of the discharge pipe (38) of the sterilizing water supplier (30), the sterilizing water sterilizes the laundry while being uniformly sprayed on the inside of the rotary washing tub (12).

#### Effect of the invention

As explained above in detail, according to the supplier of sterilizing water for a washing machine of the present invention, sterilizing water having sterilizing power, which is generated through the electrolysis of silver rods and water, is sprayed on the laundry in a washing tub during the dehydrating stroke of the washing machine, thus sterilizing bacteria remaining in the laundry.

#### Claims

1. A supplier of sterilizing water for a washing machine, characterized by the fact that in a washing machine equipped with a water tub for storing washing water, a washing tub which is rotatably installed

in the above-mentioned water tub, and a water supply valve which is installed halfway in a water supply pipe to regulate the water supply of the above-mentioned water tub, it includes a storage bucket in which an inflow opening formed at one side is connected to a flow passage of the above-mentioned water supply valve and a lower discharge opening is formed toward the inside of the above-mentioned washing tub; a pair of silver rods that is installed by immersing them into water in the above-mentioned storage bucket so that the water in the above-mentioned storage bucket is changed to sterilizing water by the electrolysis, wherein power sources with different poles are respectively connected to the silver rods; an inflow valve that cuts off the above-mentioned inflow opening when the water level of the above-mentioned storage bucket is filled to the rim; and a discharge valve that opens and closes the above-mentioned discharge opening so that the above-mentioned sterilizing water is supplied to the above-mentioned washing tub.

2. The supplier of sterilizing water for a washing machine of Claim 1, characterized by the fact that the above-mentioned inflow valve consists of a float valve that is mounted at the inflow opening of the above-mentioned storage bucket, opens and closes the flow passage in accordance with the water level, and includes a water level sensing means.

3. The supplier of sterilizing water for a washing machine of Claim 2, characterized by the fact that when it is sensed through the water level sensing means of the above-mentioned inflow valve that the water level is filled to the rim, power is applied to the above-mentioned silver rods.

4. The supplier of sterilizing water for a washing machine of Claim 1, characterized by the fact that the above-mentioned discharge valve consists of a solenoid valve that is operated by receiving power; and during the dehydrating stroke of the washing machine, the above-mentioned discharge opening is opened so that the sterilizing water in the above-mentioned storage bucket is supplied into the above-mentioned washing tub.

5. The supplier of sterilizing water for a washing machine of Claim 1, characterized by the fact that a nozzle in which multiple spray holes are formed is provided at the end of the above-mentioned discharge opening so that the sterilizing water being discharged is uniformly sprayed into the above-mentioned washing tub.

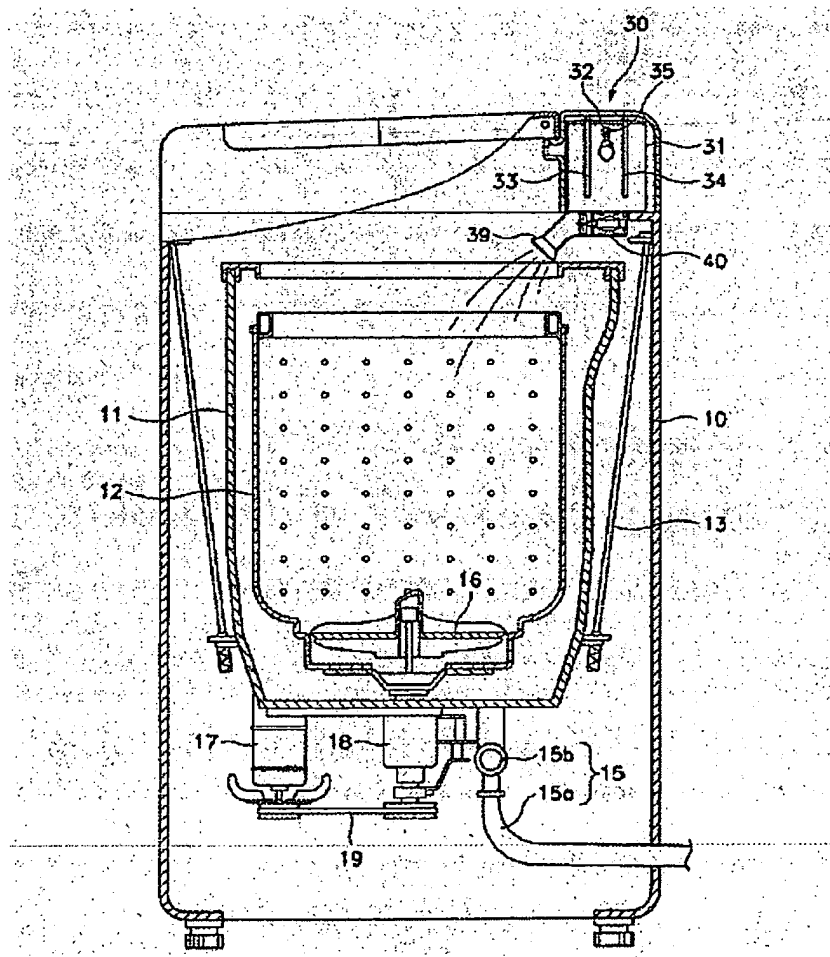


Figure 1

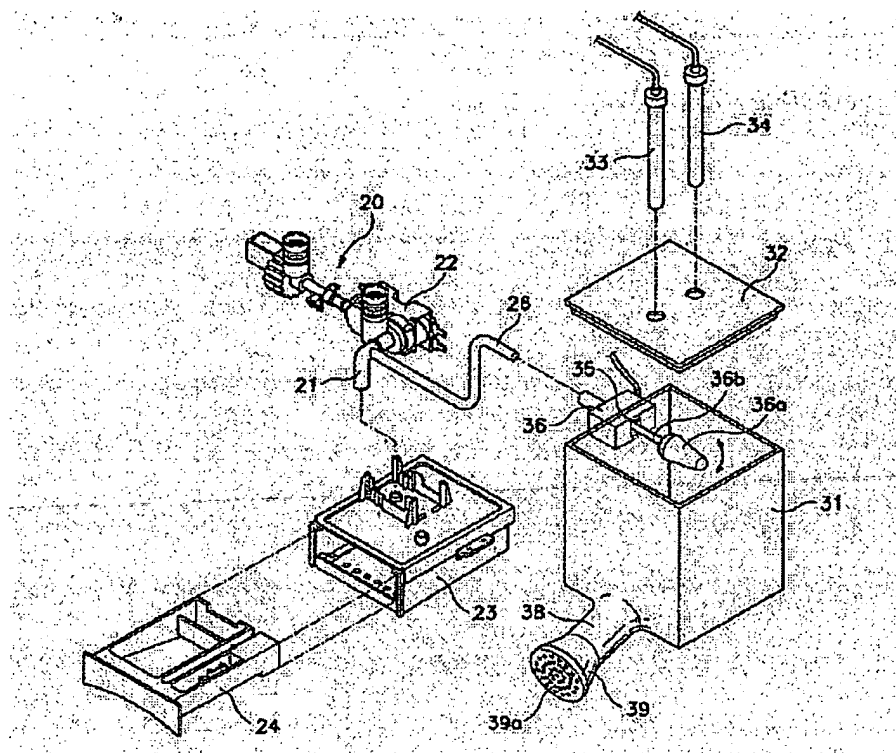


Figure 2

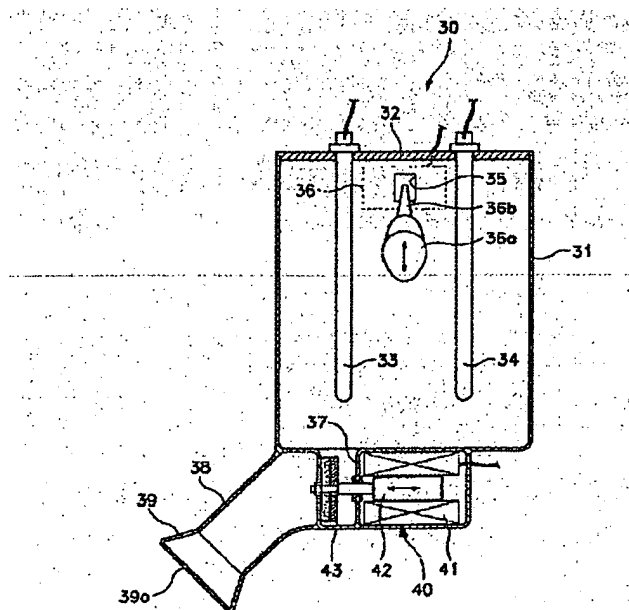
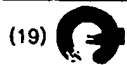


Figure 3



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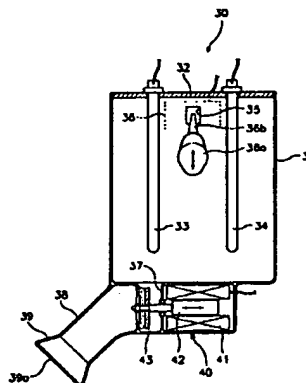
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